7-16-2009

Educational Policies Committee Program Proposal, College of Natural Resources, July 16, 2009

Utah State University

AGENDA

MEETING OF THE
UTAH STATE BOARD OF REGENTS
TO BE HELD AT
STUDENT CENTER
UTAH VALLEY UNIVERSITY
OREM, UTAH
JULY 16-17, 2009

Utah State Board of Regents
Office of the Commissioner of Higher Education
Board of Regents Building, The Gateway
60 South 400 West
Salt Lake City, Utah 84101-1284

July 8, 2009

MEMORANDUM

TO: State Board of Regents

FROM: William A. Sederburg

SUBJECT: Utah State University – Interdepartmental Revised Bachelor of Science Degree in Geography – Action Item

Issue

Utah State University (USU) requests approval to offer a revised version of the Bachelor of Science Degree in Geography, effective Fall Semester, 2009. The Department of Environment and Society and the Department of Watershed Sciences in the College of Natural Resources request to jointly offer the Bachelor of Science in Geography Degree, which is currently offered only in the Environment and Society Department. The proposal was approved by the USU Board of Trustees on March 6, 2009.

Background

The purpose of the revision of the Bachelor of Science in Geography Degree is to update the degree to provide a high quality education in the tools and disciplinary knowledge for Geography related to careers in the twenty-first century.

This revision modifies the existing Geography degree core and makes changes in each of the three existing areas of emphasis. The revised degree provides much needed updates in course offerings that reflect the current status of the discipline of Geography. The revised degree will provide a strong basis in geographic fundamentals and principles and will offer three areas of emphasis: Human-Environment Geography, Geographical Analysis and Bioregional Planning, and Physical Geography. These areas of emphasis represent important directions of Geography in the twenty-first century. The revised degree will integrate the strengths of two departments in the College of Natural Resources and will provide students with knowledge and skills critical for their future success.

Federal and state land management agencies such as the US Forest Service, Bureau of Land Management, Environmental Protection Agency, the Utah Department of Natural Resources, and the Utah Department of State Lands, Forestry, and Fire have indicated a need to hire specialists in geographic sciences. In addition, Geography majors are desired in planning professions, in private consulting firms and in various international programs. USU anticipates that the proposed changes in the BS in Geography will provide an educated workforce for these and other prospective employers.

Approximately one-third of recent Geography majors at Utah State University have chosen a "geographic perspectives" option in place of an existing area of emphasis because the existing emphases did not meet their interest or needs. The new areas of emphasis proposed in this revised degree reflect both student interests and growth areas in Geography. The Human-Environment Geography emphasis focuses on global environmental and natural resource issues. Geographical Analysis and Bioregional Planning provides students with the tools and knowledge for planning at regional scales necessary for managing natural resources under the constraints of population growth and associated development. A number of recent "geographic perspectives" majors have expressed interest in Physical Geography, and the new emphasis in this area will meet these students' needs for a physical science-based Geography degree.

USU faculty have conducted a thorough internal review of the existing degree and determined the need for revisions. It is expected that student enrollment, which has been on the decline, will increase with the modernization of the degree.

Funds from the Department of Environment and Society and the Department of Watershed Sciences will be sufficient to deliver the revised degree.

Policy Issues

Snow College, Dixie State College and Salt Lake Community College expressed support for the program and suggested that their associate degree graduates might transfer into the proposed program. The University of Utah expressed support for the proposed program and saw no competition because of the University's urban focus in its Geography program. It was suggested that graduates of the USU program might seek graduate degrees from the University of Utah's graduate program.

No policy questions were raised.

Commissioner's Recommendation

The Commissioner recommends that the Regents approve the request from Utah State University to revise the Bachelor of Science in Geography as an interdisciplinary degree.

William A. Sederburg, Commissioner

WAS/PCS
Attachment

Academic, Career and Technical Education, and Student Success Committee

Action Item

Bachelor of Science in Geography
(Revision as an Interdisciplinary Degree)

Utah State University

Prepared for:
William A. Sederburg
by
Phyllis C. Safman

July 8, 2009

Section I: The Request

Utah State University (USU) requests approval to offer a revised version of the Bachelor of Science degree in Geography, effective Fall semester, 2009. The Department of Environment and Society and the Department of Watershed Sciences in the College of Natural Resources request to jointly offer the Bachelor of Science Geography degree, which is currently offered only in the Environment and Society Department. A revision of an existing degree, it includes a modification of the Geography degree core and changes in each of the three existing areas of emphasis. The revised degree provides much needed updates in course offerings that reflect the current status of the discipline. This proposal has completed the institution's review process and was approved by the USU Board of Trustees on March 6, 2009.

Section II: Program Description

Complete Program Description

Utah State University proposes to revise the existing Geography degree to create an inter-departmental undergraduate Geography degree program. This change will capitalize on the strengths across the College of Natural Resources (CNR). The inter-departmental offering will present new opportunities for collaboration across the CNR and an opportunity to build the Geography program in new directions. It also emphasizes the integrative nature of the discipline in the twenty first century.

The revised core provides a strong basis in geographic fundamentals and principles, but reduces redundancies and courses that have ceased to meet students' needs. The three areas of emphasis in the existing degree have also been revised. The new emphases -— Human-Environment Geography, Geographical Analysis and Bioregional Planning, and Physical Geography—represent college strengths in Geography. They also represent three important directions of Geography in the twenty first century and will provide a Geography degree built around new tools and new knowledge critical for their future success. Students also are required to take two courses from each of the two other emphasis cores (for a total of 12 credits outside their own emphasis), building breadth and facilitating community among Geography majors.

The Human-Environment Geography emphasis is a reworking of the existing Cultural and Social Geography emphasis. This new emphasis responds to an expressed need for global geographic skills and draws upon existing expertise in the Environment and Society Department. It provides a broad overview of different cultures (e.g. Geography of Latin America, Conflict and Natural Resources in Africa) and of the challenges across the globe (Developing Societies, Ecology of our Changing World.) Suggested electives provide an opportunity for a student to further explore environmental issues (history, ethics, education, sustainable living) and areas of interest to citizens of the intermountain west (rural sociology, wildland recreation, living with wildlife.) The emphasis also aligns well with research and teaching strengths of recent faculty hires in the Environment and Society Department.

The Geographical Analysis and Bioregional Planning emphasis replaces the existing Planning and Analysis emphasis. The new emphasis draws upon strengths in the College in bioregional planning, which utilizes GIS modeling and mapping to understand impacts of growth and development on natural resources. Students in this new emphasis will gain a solid foundation of geographic information analysis skills and the

ability to apply planning tools and approaches to large scale issues that extend beyond city, county or other jurisdictional boundaries.
The Physical Geography emphasis replaces the existing Human Impacts on the Environment emphasis. It meets an expressed need by many current Geography majors to have a Physical Geography emphasis, and builds upon existing courses and expertise in the College. This emphasis will compare well with physical geography offerings at major universities in North America, with its focus on physical processes at a landscape scale. It draws upon the disciplinary strengths in the Watershed Sciences Department.

Purpose of Degree

The purpose for the revision of this existing degree program is to update the degree to provide a high quality education in the tools and disciplinary knowledge for Geography related to careers in the twenty-first century.

Institutional Readiness

Geography is an existing degree in the Department of Environment and Society. The proposed change in emphases and the proposed joint degree offering by two departments in the College of Natural Resources will strengthen the integrative elements of this degree and provide a high quality Physical Geography emphasis. The revised degree aligns well with recent hires in both the Department of Environment and Society and the Watershed Sciences Department. No new hires will be required. As with the existing Geography degree, the revised degree includes several required courses that are offered in other departments. These departments have been contacted and agree that the revision will not change current demand on their courses and thus will not unnecessarily burden their faculty or resources. Most of the courses in the revised Geography degree that are outside the College of Natural Resources are suggested electives.

Faculty

The revisions to this degree may increase class size in several of the classes currently taught in Environment and Society and in Watershed Sciences, but none of these classes is currently fully enrolled. A new freshman-level course developed for this degree (Professionalism for Geography Majors) may be team taught by Geography and Watershed Sciences faculty. It replaces an existing freshman orientation class and is not expected to create an unnecessary burden on current faculty. An Introduction to Spatial Analysis course will be taught by one of the Watershed Science faculty currently teaching the GIS courses in the College.

Staff

Currently this degree resides in one department only. A joint offering will involve staff from a second department, but the anticipated numbers of students in these offerings is expected to fall within current staffing capabilities.

Library and Information Resources

The main change to the revised Geography degree is the Physical Geography emphasis.
A superior undergraduate degree program in Physical Geography depends on a number of critical journal holdings. The library currently has the following important journals: Water Resources Research, Environmental Management, Biogeochemistry, Canadian Journal of Fisheries and Aquatic Sciences, Freshwater Biology, Journal of the North American Benthological Society, Limnology and Oceanography. Other important journals (Water Resources Bulletin, J. Hydrology, Advances in Hydrological Processes, Water Resources) are available through interlibrary loan.

The other two emphases in the revised degree will draw on the same library resources as the current degree, so USU does do not expect a change in library and information resource needs from these emphasis revisions.

Admission requirements

Freshmen accepted in good standing by the University are eligible for admission to this degree program. Transfer students need a cumulative 2.5 GPA for admission to the degree program.

Student Advisement

An advisor will be assigned to each student in the Geography major. Students in the Human-Environment and Geographical Analysis and Bioregional Planning emphases will be assigned advisors in the Environment and Society Department. Students in the Physical Geography emphasis will be assigned an advisor in the Watershed Science Department.

Justification for Graduation Standards and Number of Credits

The degree requires 120 credits. Thus, no justification is needed.

External Review and Accreditation

There is no national accreditation process for Geography degrees. To evaluate USU's current degree, an ad hoc committee within the College of Natural Resources met for six months to review the existing Geography degree and propose revisions to this degree. This was not a formal committee, but was open to all faculty in the College. The committee specifically sought input from the existing Geography faculty, those who had been members of the Geography Department which was eliminated in 2002, those faculty with degrees in Geography programs, and faculty currently teaching courses of importance in Geography. All three department heads in the College were invited to comment. No specific requirements were established for this committee other than the following informal goals: to maintain and increase a high quality, interdisciplinary degree; to better align the degree with existing faculty strengths; to provide all students with a solid foundation in the basic tools of Geography (such as GIS).

A smaller task force was subsequently organized and asked to suggest specific revisions to the existing degree. This task force evaluated other high quality Geography programs across the country and suggested revisions to the existing degree that would meet stated objectives. These revisions were presented at the August 2008 college-wide retreat and also at the departmental meetings for Environment and Society (ENVS) and Watershed Sciences (WATS) where comments and concerns were addressed. The revised degree has the approval of the College, of the ad hoc committee, approval of the faculty in the two departments involved in the joint offering, and approval of the USU Faculty Senate.

Projected Enrollment

The number of Geography majors has been gradually declining for the past 15 years. In the late 1990s, the Geography degree had an average of 55 students each year. The number of majors has declined since then, with only 20 majors in 2005. USU believes that the decline in numbers is in part because the current Geography degree offering needs exactly the type of revisions being proposed in this document. As a result of the revisions to this degree, it is expected that the degree will have approximately 60 majors within the next 5 years. See table below for projected student numbers over the next 5 years. Note that the faculty delivering the courses for this revised degree may also teach courses for other majors.

Year	Student Headcount	# of Faculty	Student-to-Faculty Ratio	Accreditation Req'd Ratio
1	24	12	2.1	NA
2	39	12	2.9	NA
3	54	12	3.8	NA
4	60	12	4.6	NA
5	60	12	5.0	NA

Expansion of Existing Program

This is a revision and not an expansion of an existing program. The program will continue to have three areas of emphasis. The new Physical Geography emphasis will utilize courses currently taught by faculty in the Watershed Science Department. USU does not expect student numbers to exceed the capacities of these courses.

Section III: Need

Program Need

The revision of the Geography degree will maintain Geography as an identified discipline and is more rigorous than the existing degree. The revised areas of emphasis more accurately reflect the interests and needs of new students and the emerging disciplinary interests embraced by Geography programs across the country.

Labor Market Demand

Federal and state land management agencies such as the US Forest Service, Bureau of Land Management, Environmental Protection Agency, the Utah Department of Natural Resources, and the Utah Department of State Lands, Forestry, and Fire have indicated a need to hire specialists in Geography sciences. In addition, Geography majors are desired in planning professions, in private consulting firms and in various international programs. Potential employers need two types of students with geographic skills. First is a need for employees who have technical skills in spatial analysis and geographic information systems. Students attaining the proposed BS in Geography with an emphasis in Physical Geography or Geographical Analysis and Bioregional Planning will become competent in state-of-the-art technologies for conducting spatial and geographic analyses concerning a variety of natural resources. The second need expressed by potential employers is for employees who understand, analyze, and model changing demographics in state, region, and global environments.

Changes in Utah's populations and in the behavior of its citizens put increasing demands on the state's and region's natural resources. To maximize placement of Geography graduates into career tracks that best match their aspirations and abilities, faculty members will work with individual students to determine professional aspirations, design appropriate course work and undergraduate research, initiate participation in professional meetings, and introduce them to professionals at other universities and natural resource agencies. Students completing the proposed BS in Geography with an emphasis in either Geographical Analysis and Bioregional Planning or in Human-Environment Geography will be well versed in both

understanding and analyzing the changing demographics of the state and region. In addition to employment needs of state and federal agencies, environmental consulting firms and non-profit environmental organizations have expressed needs for employees with better computer and analytical skills in geographic sciences. USU anticipates that the proposed changes in the BS in Geography will provide an educated workforce for these prospective employers.

Student Demand

Approximately one third of recent Geography majors have chosen a "geographic perspectives" option in place of an existing area of emphasis because the existing emphases did not meet their interest or needs. The proposed areas of emphasis reflect growth areas in Geography and USU expects enrollment numbers to increase as a result of the revisions to the degree. The Human-Environment Geography emphasis meets the needs of students interested in studying global environmental and natural resource issues. The Geographical Analysis and Bioregional Planning emphasis provides students with a sound foundation in GIS and Geographic Information Analysis and in planning at a regional scale. This is a growing discipline and fills a need for planning skills at multiple scales (from municipal to national forests). A number of the "geographic perspectives" students were primarily interested in physical geography or GIS, and the College of Natural Resources is convinced that the emphasis in Physical Geography will meet these students' needs for a physical science-based Geography degree.

Similar Programs

The University of Utah's Geography degree offers the opportunity to pursue more specialized degrees. Thus, there is potential overlap with all three of the proposed areas of emphasis in USU's revised Geography degree. However, the University of Utah's approach has a different focus.

Collaboration with and Impact on other USHE Institutions

It is anticipated that students who graduate with an associate degree from other USHE institutions may be interested in transferring to the proposed four-year degree. Recent recruiting trips to Southern Utah University, Snow College, the College of Eastern Utah, Dixie State College, and the Uintah Basin Branch Campus of USU indicated that students at these institutions would be interested in finishing their baccalaureate degrees in the College of Natural Resources. USU proposes to update or develop articulation agreements with these institutions so that students take the appropriate courses while attaining their associate degree. Key required freshman- and sophomore-level courses have suitable substitutes taught at these sister institutions.

Benefits

Utah State University and the USHE benefit from establishing the proposed degree program by serving a need for students wanting to begin careers in geographical fields. Although Geography programs exist in the USHE, none combines the specific strengths of USU's College of Natural Resources. State and federal land and water management agencies have a need for professionals trained in geographical fields. Many of the current graduates in the Geography and Watershed Science degree programs gain employment from these agencies. These agencies anticipate that their hiring needs will increase greatly in the next several years. USU's proposed degree program revision would allow graduates to position themselves to take advantage of these new positions. In addition, the Human-Environment Geography emphasis will prepare USU students to assume leadership roles in addressing international natural resource issues.

The College of Natural Resources has made a commitment to recruiting minority students into all its majors. Watershed Sciences has been meeting with environmental scientists and other representatives of

the Uintah Basin's Ute Tribe's who value the emphasis areas in the revised Geography degree. Of particular interest is the Physical Geography and Geographical Analysis emphasis areas. The College believes that the importance of water and earth resources issues on Native American lands will make the proposed degree revisions especially relevant to these minority students. This initiative will assist USU and the USHE to attain their goals of enhancing diversity at system institutions.

Consistency with Institutional Mission

As Utah's land grant university, Utah State University has a unique role in the integration of teaching, research, and extension programs. The education of natural resource professionals is frequently conducted at land grant institutions nationwide. The USU mission statement documents the university's role in "serving the public through learning, discovery, and engagement." The proposed revisions to the Geography degree will allow for better integration of teaching, research, and extension programs across the College of Natural Resources. This proposed degree program will provide a high quality undergraduate educational program that integrates well with the College and University's research endeavors. The requirements of the degree program will assure that students attain the analytical skills and knowledge of geographic principals necessary to contribute substantially to the science and management of natural resources in the state, nation and the world. Establishment of the proposed joint offering in the Department of Environment and Society and the Department of Watershed Sciences will align with the missions of both departments (1) to foster discovery, learning, and application of knowledge about aquatic and earth resources and their related ecosystems to promote stewardship of the environment (WATS), and (2) to bring people and science together for healthy communities and enduring ecosystems (ENVS).

Section IV: Program and Student Assessment

Program Assessment

USU's goal is to provide a degree program that produces 15 graduates per year beginning in 2012 thereby increasing student numbers to those achieved in the 1990s. USU proposes to evaluate success in educating students in the following ways. The heads of the Department of Environment and Society and the Department of Watershed Sciences will conduct interviews on all graduating students to assess the degree to which the students perceive they received a high quality education. In addition to these individual interviews, faculty will conduct 9-month and 3-year placement surveys for all of their graduates to determine how well these students fared in the professional careers to which they aspired. They will also conduct interviews with leaders in governmental regulatory and funding agencies to determine how their graduates served them.

Expected Standards of Performance

The proposed program modifications have allowed the two departments to jointly review and modify learning objectives. The modified learning objectives include: 1) analysis of complex, real world problems, 2) ability to think logically and critically, 3) employ scientific reasoning and methods, 4) utilize current information technologies, 5) analyze problems at different spatial scales, 6) communicate effectively, 7) work cooperatively in teams, and 8) integrate social, biological, and physical science knowledge in natural resource problem solving. The new emphases will highlight quantitative analysis of environmental data, theoretical tools for understanding the human-environment relation, and techniques for forecasting human and environmental change. Students will become facile in computer applications of geographic sciences, learn the basics of inferential statistics, gain exposure to remote sensing and geographic information system technology, analyze human-environment interactions, and gain writing skills necessary to convey

their analytical abilities.

Section V: Finance

Financial Analysis Form for USU Geography Degree					
	Year 1	Year 2	Year 3	Year 4	Year 5
Students					
Projected FTE Enrollment	24	39	54	60	60
New Cost per FTE[1]	0	0	0	0	0
Student/Faculty Ratio[2]	19:1	20:1	22:1	22:1	22:1
Projected Headcount	24	39	54	60	60
Projected Tuition					
Gross Tuition	91,968	96,566	101,394	106,464	111,787
Tuition to Program	0	0	0	0	0
5 Year Budget Projection					
	Year 1	Year 2	Year 3	Year 4	Year 5
Expense					
Salaries & Wages[1]					
Benefits					
Total Personnel	N/A - expenses will be covered through reallocation				
Current Expense	and reassignment of existing faculty and staff				
Travel					
Capital					
Library Expense					
Total Expense	0	0	0	0	0
Revenue					
Legislative Appropriation					
Grants & Contracts					
Donations	N/A - funded through reallocation & reassignment				
Reallocation	of existing resources				
Tuition to Program					
Fees					
Total Revenue	0	0	0	0	0
Difference					
Revenue – Expenses	0	0	0	0	0
Comments					

1 Funding will be provided through reallocation and reassignment of the existing resources of the Environment and Society and Watershed Sciences departments.

2 Based on historical FTE-Student, FTE-Faculty, & Student/Faculty Ratios of Environment and Society and Watershed Sciences departments, increased by budgeted FTE-Student growth.

(2008 Blue Book, pp 145-153)

The Department of Environment and Society and the Department of Watershed Sciences will offer this revised BS degree in Geography by shifting the teaching responsibilities of two recent faculty hires and modifying teaching assignments of existing faculty. The recent faculty hire in Spatial Analyses in the Watershed Sciences Department will teach the new sophomore level course in the Geography Core (An Introduction to Spatial Analysis) and Geographic Information Systems, a required course for students in two of the three emphases in the degree. A new faculty member in the ENVS Department, will teach Geographic Approaches to Human-Environment Relationship and Geography of Latin America, two courses required for students choosing an emphasis in Human-Environment Geography. These two courses are in the list of suggested electives for the other two emphases. The budget outlined above will allow the two departments to deliver this degree.

Funding Sources

The salaries, wages, benefits, and operating costs will be provided through the existing Education and General budget lines of the Environment and Society Department and the Watershed Sciences Department. Recent increases in department operating fees will be used to provide for computer facilities, laboratory supplies, and travel for field trips. The Watershed Sciences Department has paid for the site licenses for geographic software and will continue providing for these expenses.

Reallocation

Resources to support this revision will come mainly from modification in the role of recently hired faculty in the two participating departments. The revised degree will take advantage of the research interests and teaching expertise in human-environment interactions of two assistant professors in the ENVS Department. The recent hire in Spatial Analyses in the WATS Department will take advantage of state-of-the-art technologies in Geospatial Analyses and engage students in the degree program with these new techniques.

Impact on Existing Budgets

USU requests no new funding for this modification. Funds from the Department of Environment and Society and the Department of Watershed Sciences will be sufficient to deliver the revised degree.

Appendix A: Program Curriculum

(* indicates a new course - submitted to EPC)

Course Prefix and Number	Title	Credit Hours
General Ed Requirements		34
Geography CORE		
GEOG 1990 *	Professionalism course for majors	1
GEOG 1000	Physical Geography	3
GEOG 1005	Physical Geography Lab	1
GEOG 1300	World Regional Geography	3
GEOG 2930*	Introduction to Geographic Information Science	3
ENVS 3330	Environment and Society	3
	Sub-Total	14
Emphasis 1: Human-Environmental Geography		
Required Courses		
HIST 3950	Environmental History	3
GEOG 4100	Geographic Approaches to Human-Environment Relationship	3
GEOG 4120*	Environment and Development in Latin America	3
GEOG 4140*	Violent Environments: Linking Ecology and Conflict Sub-Saharan Africa	3
SOC 3110	Methods of Social Research	3
SOC 4650	Developing Societies	3
STAT 1040	Introduction to Statistics	3
WILD 2200	Ecology of Our Changing World	3
2 courses from each of the other emphases		12
	Sub-Total: Human-Environmental Geography	36
Suggested electives for Human-Environment Geography Emphasis (24 credits from this list)		
ANTH 2010	Peoples of the Contemporary World	3
ANTH 3320	Ancient Humans and the Environment	3
ENVS 2340	Natural Resources and Society	3
ENVS 3500	Quantitative Assessment of Environment and Natural Resource Problems	3
ENVS 3000	Natural Resources Policy and Economics	3
ENVS 3600	Living with Wildlife	3
ENVS 4000	Human Dimensions of Natural Resource Management	3
ENVS 4470	Sustainable Living	3
ENVS 4500	Wildland Recreation Behavior	3
ENVS 5110	Environmental Education	3

ENVS 5550	Sustainability: Concepts and Measurement	3
PHIL 3510	Environmental Ethics	3
POLS 4820	Natural Resources and Environmental Policy	3
SOC 3120	Social Statistics	3
SOC 3200	Population and Society	3
SOC 3600	Sociology of Urban Places	3
SOC 3610	Rural Sociology	3
SOC 4620	Sociology of Environment and Natural Resources	3
	Sub-Total: Human-Environmental Geography	24

Emphasis 2: Geographical Analysis and Bioregional Planning

Required courses:

ENVS 4130	Recreation Policy and Planning	3
ENVS 5570	Sustainable Living	3
HIST 3950	Environmental History	3
STAT 2000 or 3000	Statistical Methods	3
WATS 4930	Geographic Information Systems	3
WATS 5930	Geographic Information Analysis	3
WILD 5750	Applied Remote Sensing	3
WILD 2200	Ecology of Our Changing World	3
Plus 2 courses from each of the other two emphases		12
	Sub-Total: Geog. Analysis and Bioregional Planning Emphasis	36

Suggested electives for Geographical Analysis and Bioregional Planning Emphasis (24 credits from this list)

ENVS 2340	Natural Resources and Society	3
ENVS 3000	Natural Resources Policy and Economics	3
ENVS 3500	Quantitative Assessment of Environmental and Natural Resource Problems	3
ENVS 4000	Human Dimensions of Natural Resource Management	3
ENVS 5300	Natural Resource Law and Policy	2
ENVS 5320	Water Law and Policy in the US	3
ENVS 5550	Sustainability: Concepts and Measurement	3
GEOG 4200	Regional Geography	3
LAEP 2300	History of Landscape Architecture	3
LAEP 3700	City and Regional Planning	3
POLS 4820	Natural Resources and Environmental Policy	3
PHIL 3510	Environmental Ethics	3
SOC 3600	Sociology of Urban Places	3
SOC 3610	Rural Sociology	3
STAT 5410	Applied Spatial Statistics	3
WATS 3700	Fundamentals of Watershed Science	3
WILD 3800	Wildland Ecosystems	3
	Sub-Total: Geog. Analysis and Bioregional Planning Emphasis	24

Emphasis 3: Physical Geography

Required Courses

MATH 1100 or 1210	Calculus	3
SOIL 3000	Fundamentals of Soil Science	4
STAT 3000	Statistics for Scientists	3
WATS 3700	Fundamentals of Watershed Sciences	3
WATS 3820	Climate Change	3
WATS 4490	Hydrology	4
WATS 4930	Geographic Information Systems	4
Plus 2 courses from each of the other two emphases		12
	Sub-Total: Physical Geography Emphasis	36

Suggested electives for Physical Geography Emphasis (24 credits from this list)

BIOL 5010	Biogeography	3
ENVS 3000	Natural Resources Policy and Economics	3
ENVS 5320	Water Law and Policy in the US	3
GEOL 1110	Dynamic Earth	4
MATH 1220	Calculus II	3
PHYS 2210	General Physics – Sci and Eng. I	4
PHYS 2220	General Physics – Sci and Eng. II	4
STAT 5410	Applied Spatial Statistics	3
WATS 5150	Fluvial Geomorphology	3
WATS 5170	Fluvial Geomorphology Lab	2
WATS 3600	Geomorphology	3
WATS 5760	Remote Sensing: Modeling and Analysis	3
WATS 5930	Geographic Information Analysis	3
WILD 5760	Applied Remote Sensing	3
	Sub-Total: Physical Geography Emphasis	24

General Electives	12
Total Number of Credits	120

New courses

The proposed core includes two new courses:

- Geog 1xxx - a "professionalism" course, covering some basics of the discipline and would be offered in place of ENVS 1990.
- Geog 2930 - an introductory course to geographic information sciences (covering basics in GIS/RS, as well as basics in computer cartography), which would serve as a pre-requisite to a senior level GIS course (WATS 4930, which will be renamed GEOG 4930). The proposed GEOG 2930 course will contain information currently in GEOG 3850 (Map, Air Photo, and GIS interpretation and GEOG 4850 (Cartographic Design), but at an appropriate level for an introductory course.

The proposed core does not include several courses in the existing core:

- WATS 4930 (to be renamed GEOG 4930) would be offered within the Geographic Aanalysis and Bioregional Planning and the Physical Geography areas of emphasis.
- GEOG 1400 (Human Geography) - this course will no longer be covered by core geography faculty.
- GEOG 4200 (Regional Geography) would be dropped from the combined core and offered within the Human-Environment emphasis courses.
- GEOG 3850 and GEOG 4850 will no longer be required in the proposed core because of the new introductory course (GEOG 2930). During a transitional period of multiple years, these courses will be available, as required courses, to current Geography students. During this transitional period, these courses will be available to new students as electives.

Appendix B: Program Schedule

Draft 4-year plan for new GEOG degree:

1st year:

Fall:

GEOG 1XXX	1
GEOG 1300	3
ENGL 1010	3
BAI	3
BCA	3
Free Electives	2

Spring:

GEOG 1000	3
GEOG 1005	1
*STAT 1040	3 (or other 3 credit approved QL course)
BHU	3
*Breadth Exploration	3
Free Electives	2

2nd year:

Fall:

GEOG 2930	3
*WILD 2200	3 (or other 3 credit approved BLS course)
*Emphasis required or elective courses	9

Spring:

ENGL 2010	3
*CI course	3
*STAT 2000, 3000, or other approved QI	3
Emphasis required or elective courses	6

3rd year:

Fall:

*CI course	3
*DSC or DSS course	3
*Emphasis required or elective courses	9

Spring:

ENVS 3330	3
*HIST 3950 or other approved DHA course	3
*Free electives or emphasis req. or elec.	9

4th year:

Fall:

*Free electives or emphasis required or electives	15

Spring:

*Free electives or emphasis required or electives	15

* = Required course will vary, depending on which emphasis is chosen.

Appendix C: Faculty

Listed below are faculty who currently teach the courses at Utah State University to be used in support of the revised Bachelor of Science degree in Geography.

College of Natural Resources

Department of Environment and Society:

Dr. Ted Alsop, Professor, Department of Environment and Society GEOG 1000, GEOG 4200
Dr. Ann Laudati, Assistant Professor, Department of Environment and Society GEOG 1005, GEOG 4100
Dr Claudia Radel, Assistant Professor, Department of Environment and Society GEOG 1300
Dr. Mark Brunson, Professor, Department of Environment and Society
Dr. Layne Coppock, Associate Professor, Department of Environment and Society ENVS 3330
Dr. Steven Burr, Associate Professor, Department of Environment and Society ENVS 4130
Dr. Michael Dietz, Assistant Professor, Department of Environment and Society ENVS 5570

Department of Watershed Sciences:

Dr. Jack Schmidt, Professor, Department of Watershed Sciences WATS 5150, 5170
Dr. Jiming Jin, Assistant Professor, Department of Watershed Sciences WATS 3820
Dr. Joseph Wheaton, Assistant Professor, Department of Watershed Sciences, WATS 2930, 4930
Dr. Tamao Kasahara, Assistant Professor, Department of Watershed Sciences WATS 4490, WATS 3700
Dr. Helga VanMiegroet, Professor, Department of Watershed Sciences WATS 3700

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